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Nuclear Military Monitoring

RECEIVED 1995.MAR.26
MAR 30 1995
DOE-RL / DCC

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DOE Richland Field Office
P.O. Box 550
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Re: CRCIA: Contaminants of Concern

Randy,

This letter identifies several radionuclides of potential interest to CRCIA that I'd particularly like to talk about at our meeting on the 31st.

I've been checking the records of Radionuclide Releases to the Columbia River from Hanford Operations, 1944-1971 (PNWD-2223) to identify historic releases which might be of concern either for remediation or dose reconstruction, which might be significant, AND which might have been omitted from study. Thus, the results must have potential pathways of interest and biological impacts. An additional requirement of potential retention in the system was imposed. Group I has long halflife and might still be present, and Group II has medium halflife and would only be of interest for dose reconstruction. All candidates are pure beta emitters which would not be readily detected unless they were targeted.

Group I: Long-halflife candidates.

Radionuclide	Halflife [years]	Source
Ca-41	1.0E5	n-activation: Ca++ in river water thru old reactors.
Ni-59	7.6E4	n-activation: In Zr tubing in old reactors?
Ni-63	1.0E2	"
Zr-93	1.5E6	n-activation: Zr tubing in old reactors?

Group II: Medium-halflife.

Radionuclide	Halflife [years]	Source
S-35	0.239	n-activation: SO4-- in river water and water treatments.
Ca-45	0.449	n-activation: Ca++ in river water thru old reactors.
Fe-55	2.73	n-activation: Tubing or fittings, impurities?

To finish this check, I need the chemical compositions of the old reactor process tubes which are listed as

Alcoa C64F
X8001F
zirconium

I wonder if you would have those data handy?

With my thanks,

Norm Buske

APR 1995
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